At page 17, lines 8-12, please replace the paragraph with the following. Note that this paragraph was previously amended in the Preliminary Amendment of July 31, 2000.

Additional information on the production and properties of vanadium oxide nanoparticles is found in commonly assigned and simultaneously filed, U.S. Patent Application Ser. No. 08/897,778, now U.S. Patent 6,106,798, entitled "Vanadium Oxide Nanoparticles," incorporated herein by reference.

REMARKS

Claims 1, 4-11 and 13-29 are pending. By this Amendment, references to copending applications in the specification have been updated. No new matter is introduced by the amendments.

Applicants have not received back three sheets of PTO Form 1449 from the IDS filed on July 20, 2000 initialed by the Examiner. Applicants respectfully return of the initialed forms.

Applicants request reconsideration of the rejections of the claims based on the following remarks.

Rejection Under 35 U.S.C. §112

The Examiner rejected claims 15-19 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. The Examiner indicated that the omitted elements related to the conditions under which the cathode exhibits an energy density greater than about 900 Wh/kg. Applicants have provided claims that include all the essential elements to achieving the improvements of the invention. Applicants believe that the Examiner has failed to establish a prima facie case of

indefiniteness under section 112, second paragraph. Applicants request reconsideration of the rejection based on the following comments.

In particular, Applicants' specification does not disclose additional essential features of the invention (MPEP 2172.01). Thus, Applicants believe that the amended claim 15 does not omit any essential elements since all of the identified essential elements are present in the claim. Furthermore, Applicants do not believe that there are gaps connecting the enumerated elements of claim 15 (MPEP 2172.01), and the Examiner has not indicated that specific elements are not connected. Claims 16-19 depend from claim 15 and incorporate all of the elements of claim 15. Applicants respectfully request the withdrawal of the rejection of claims 15-19 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements.

Double Patenting

The Examiner rejected claims 1, 4-11 and 13-29 under the non-statutory judicial doctrine of double patenting over claims 1-24 of U.S. Patent 5,952,125. However, Applicants filed a Terminal Disclaimer over U.S. Patent 5,952,125 with the Preliminary Amendment of July 31, 2000. Applicants believe that this Terminal Disclaimer obviates the Non-Statutory Double Patenting rejection. Applicants respectfully request withdrawal of the rejection of claims 1, 4-11 and 13-29 under the non-statutory judicial doctrine of double patenting over claims 1-24 of U.S. Patent 5,952,125.

Rejection Under 35 U.S.C. §102 (a) and (e)

The Examiner rejected claims 1, 4-6, 8, 9, 13, 14, and 20-27 under 35 U.S.C. §102 (a) and (e) as being anticipated by U.S. Patent 5,549,880 to Koksbang (the Koksbang patent). The Examiner noted that the Koksbang patent discloses a lithium battery based upon a lithiated vanadium oxide cathode active material. Applicants believe that a close reading of the

Koksbang patent indicates that the material described therein falls outside of Applicants' claims, as described further in the following analysis. Thus, Applicants' claims are not prima facie anticipated by the Koksbang patent. Applicants respectfully request reconsideration of the rejections based on the following analysis.

At column 2, lines 59-61, the Koksbang patent describes a LiV_yO_z material having a "surprisingly small particle size on the order of 0.1 to 5 microns, and typically less than 10 microns." This language is repeated at column 5, lines 4-6 in the context of the examples. It seems clear that the materials produced by Koksbang had a range of particle diameters from about 0.1 microns to about 5 microns. Thus, the particles of Koksbang with a distribution from about 0.1 microns to about 5 microns would have an average particle size of roughly 2.4-2.5 microns. Applicants' claims have an average particle size from about 5 nm to about 500 nm. Thus, the particles produced and described by Koksbang have an average particle size greater than the claimed size approximately a factor of five or more.

The Koksbang patent does not indicate how to vary the particle size of the vanadium oxide particles produced by their process. In particular, the Koksbang patent does not teach or suggest how to produce vanadium oxide particle with an average particle size from about 5 nm to about 500 nm. Since the Koksbang patent only teaches vanadium oxides with an average particle size of about 2.5 microns, the Koksbang patent does not disclose Applicants' claimed invention. Applicants respectfully request the withdrawal of the rejection of claims 1, 4-6, 8, 9, 13, 14, and 20-27 under 35 U.S.C. §102 (a) and (e) as being anticipated by the Koksbang patent.

Rejection Under 35 U.S.C. §103 (a)

The Examiner rejected claims 1, 4-11,13,14, and 20-28 under 35 U.S.C 103 (a) as being obvious under U.S. patent 5,443,809 to Olsen (the Olsen patent). The Examiner indicated

that it would have been obvious to one skilled in the art to use the metal oxide material disclosed by Olsen in a conventional secondary lithium battery because the cathode materials disclosed by Olsen are intended to be used in such a manner. The Examiner noted that the Olsen patent discloses methods of making "electrode-quality" metal oxides having particle sizes from 0.1 micron to 100 microns for use in lithium secondary batteries without elaborating on details of a lithium secondary battery. However, Applicants assert that the Olsen patent does not teach appropriately sized vanadium oxides. Therefore, the Olsen patent does not render the claims prima facie obvious. Applicants respectfully request reconsideration of the rejections based on the following analysis.

The Olsen patent describes vanadium oxides synthesized from ammonium metavanadate. The Olsen patent notes in column 4 lines 59-66, that the particle size of the ammonium metal oxide feedstock used in the synthesis is, "on average, from about 0.1 μm to about 100 μm, and preferably from about 1 μm to about 10 μm." The product particle size is similarly described as "on average, approximately in the range of from 0.1 μm to about 100 μm, preferably from about 1 μm to about 10 μm."

The above-quoted discussion of both feedstock and product particle size is ambiguous with respect to the phrase "on average". The statements can be interpreted to mean that an average particle collection has a range of particle sizes for most of the particle in the collection of particles in the range from about 0.1 μm to about 100 μm, preferably from about 1 μm to about 10 μm. The average particle size would fall toward the middle of the range. The patent provides no examples of manufactured product particle properties, including size, nor does the patent provide feedstock source or properties that could be used to further clarify the language. Since the best interpretation of the Olsen patent results in the conclusion that the vanadium oxide particles disclosed in the Olsen patent have an average particle size well outside Applicants' claimed range of 5 nm to 500 nm, the Olsen patent does not teach or suggest

Applicants' claimed invention. Since claimed features of Applicants' invention are not taught or suggested in the Olsen patent, the Olsen patent does not render Applicants' claimed invention prima facie obvious. Applicants respectfully request the withdrawal of the rejection of claims 1, 4-11, 13, 14 and 20-28 under 35 U.S.C. 103(a) as being obvious in view of the Olsen patent.

CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

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February 15, 2002
Date of Deposit

Peter S. Dardi

ATTACHMENT
REDLINED AMENDMENT

Specification As Amended

The Cross Reference to Related Applications has been amended as follows:

This application is a continuation of copending and commonly assigned U.S. Patent Application Serial No. 09/333,099, now U.S. Patent 6,130,007 to Bi et al., entitle "Batteries With Electroactive Nanoparticles," incorporated herein by reference, which is a continuation of U.S. Patent Application Serial No. 08/897,776, now U.S. Patent 5,952,125.

At page 17, lines 8-12, the paragraph was amended as follows. Note that this paragraph was previously amended in the Preliminary Amendment of July 31, 2000.

Additional information on the production and properties of vanadium oxide nanoparticles is found in commonly assigned and simultaneously filed, U.S. Patent Application Ser. No. 08/897,778, now U.S. Patent 6,106,798, entitled "Vanadium Oxide Nanoparticles," incorporated herein by reference.